We claim:

- A configuration for detecting defects on a substrate within a processing tool, comprising:
- a loadport for loading or unloading the substrate to the processing tool;
- a device transfer area within the processing tool;
- a robot handling area connected to said load port and communicating with said device transfer area through an input slot;
- at least one processing chamber formed in the processing tool;
- a robot arm configured to transfer substrates between the load port, said robot handling area, and said at least one processing chamber;

an optical sensor with an illumination system mounted within said device transfer area above said input slot, for recording an image of a respective substrate being held by said robot arm in said device transfer area; and

a control unit connected to said optical sensor for recording the image taken with said optical sensor, and for comparing images taken by said optical sensor.

- 2. The configuration according to claim 1, wherein said optical sensor is a sensor configured for performing a macrodefect inspection.
- 3. The configuration according to claim 1, wherein said optical sensor has a minimum resolvable structure width of more than 10 μm and of less than 100 μm .
- 4. The configuration according to claim 1, wherein:

said optical sensor is a scanner recording images in columns from said substrate during a movement of said substrate effected by said robot arm;

said control unit is connected to a motor moving said robot arm for obtaining the substrate position during the movement; and

said control unit includes a processing unit for building an image from the image columns and the substrate positions.

- 5. The configuration according to claim 1, wherein said optical sensor includes a focusing means connected to said control unit for focusing said optical sensor to a distance according to a height of a transfer path of said substrate.
- 6. The configuration according to claim 1, wherein:

the substrate is a reticle or a mask;

said loadport is connected to a reticle library;

said processing tool is an exposure tool; and

said optical sensor is a CCD-camera.

- 7. The configuration according to claim 1, wherein the substrate is a semiconductor wafer and said loadport is configured to receive a wafer carrier.
- 8. A method for detecting defects on a mask or reticle within an exposure tool having a reticle library, a device transfer area, an optical sensor, and an illumination system for illuminating an area monitored by the optical sensor, the method which comprises:

transferring a reticle from the reticle library to the device transfer area;

recording an image of the mask or reticle with the optical sensor to generate a recorded image;

comparing the recorded image with a reference image;

issuing a signal in response to the comparison; and

transferring the mask or reticle to the exposure tool and exposing a semiconductor wafer using the mask or reticle in response to the signal.

9. A method for detecting defects on a semiconductor device within a processing tool, the processing tool including a device transfer area, an optical sensor, and an illumination system for illuminating an area monitored by the optical sensor, the method which comprises:

providing the semiconductor device to the device transfer area;

recording a first image of the semiconductor device using the optical sensor;

transferring the semiconductor device to the processing tool;

performing a process step on the semiconductor device;

transferring the semiconductor device back to the device transfer area;

recording a second image of the semiconductor device using the optical sensor;

comparing the first image with the second image; and

issuing a signal in response to the comparison.

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10. The method according to claim 9, wherein the comparing step comprises:

subtracting one of the images from the other one of the images to generate a subtracted image;

identifying a pattern in the subtracted image; and comparing the pattern with at least one reference pattern.

- 11. The method according to claim 10, wherein the at least one reference pattern is a pattern representing a defect on a semiconductor device.
- 12. The method according to claim 9, wherein the defect is at least one of:
- a particle on a device backside causing a focus spot;
- a particle on a device frontside causing distortions during resist spin-on; and
- a particle on a device frontside causing resist lift-off.
- 13. The method according to claim 9, which comprises recording the first and second images by scanning the

semiconductor device during a movement of the semiconductor device across the device transfer area.

- 14. The method according to claim 9, which comprises stopping a processing of the inspected semiconductor device in response to the signal.
- 15. A method for detecting defects on a robot arm in a processing tool, the processing tool including a device transfer area, an optical sensor, and an illumination system, and the robot arm is configured to transfer a substrate to the device transfer area, and the method which comprises:

moving the robot arm to the device transfer area without being loaded with a substrate;

recording a first image of the robot arm in the device transfer area;

transferring a number of substrates to and from the device transfer area with the robot arm;

moving the robot arm to the device transfer area without being loaded with a substrate;

recording a second image of the robot arm in the device transfer area;

comparing the first image and the second image; and issuing a signal in response to the comparison.

16. A method for detecting a substrate identification number patterned on a surface of a substrate in a processing tool, the processing tool including a device transfer area, an optical sensor, and an illumination system, and the method which comprises:

delivering the substrate to the device transfer area;

recording an image of the substrate;

identifying the identification number by way of a pattern recognition algorithm; and

issuing a signal in response to the identification.